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PATENT



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Bryan Wolf

Applicant's Reference: IGT1P064/P-46

Application No.: 10/006,496

Examiner: UNASSIGNED

Filed: December 5, 2001

Group: UNASSIGNED

Title: **METHOD FOR REPRESENTING A GAME  
AS A UNIQUE NUMBER**

**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail to: Commissioner for Patents, Washington, DC 20231 on January 14, 2002.

Signed:

Leslie Russell

**Separate Letter to the Official Draftsman**

Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Enclosed are the formal drawings for the above-identified patent application. If the Draftsman has any question concerning the corrected drawings, he or she is respectfully requested to contact the undersigned.

Respectfully submitted,  
BEYER WEAVER & THOMAS, LLP

Jeffrey K. Weaver  
Registration No. 31,314

P.O. Box 778  
Berkeley, CA 94704-0778  
(510) 843-6200

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101

103

DEFINE AN ORDERING SCHEME  
AND RULES FOR CLASS OF GAME

105

CONVERT A GAME  
ARRANGEMENT TO A NUMBER

107

CONVERT A NUMBER TO A GAME  
ARRANGEMENT

**Figure 1**

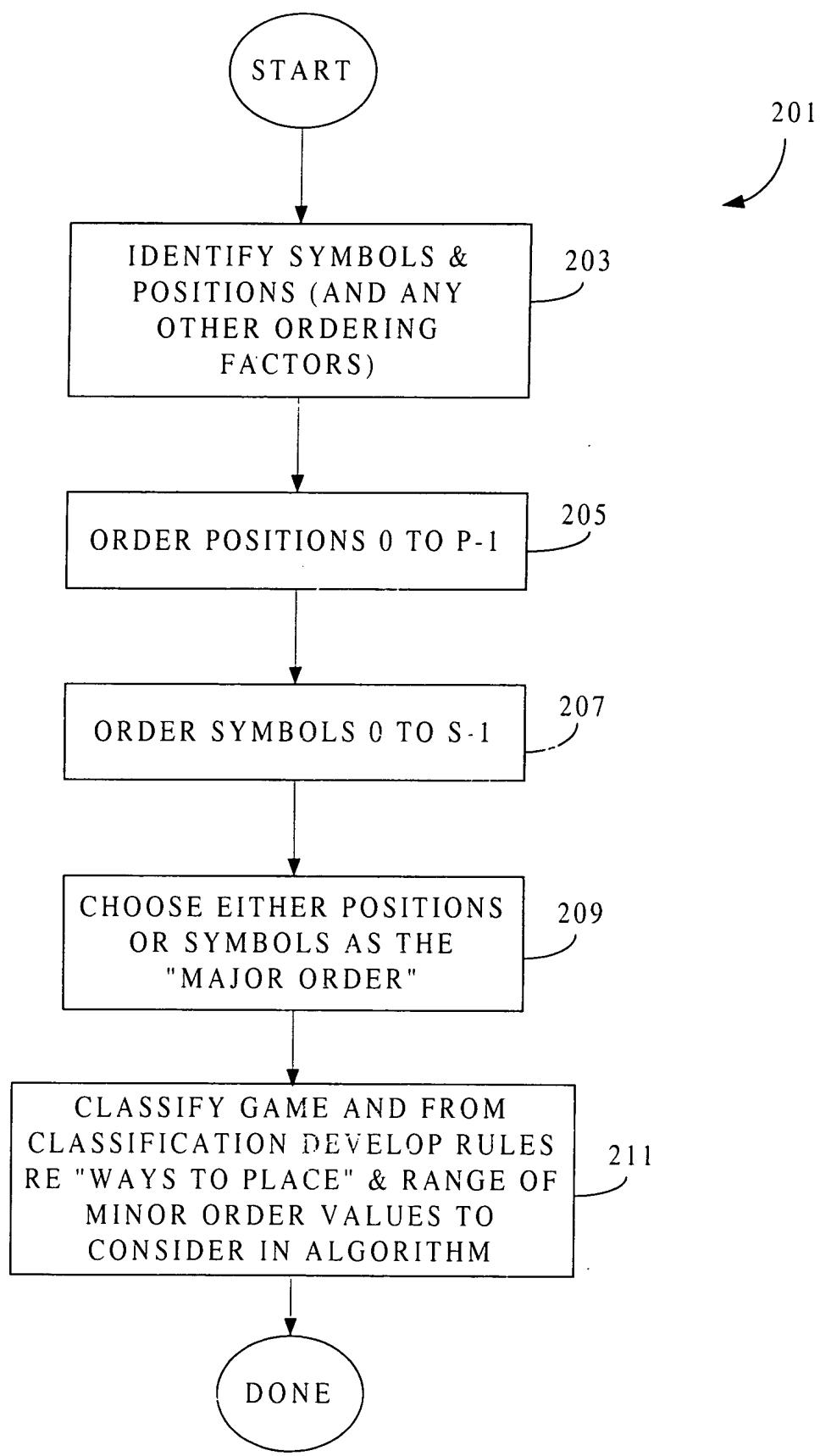
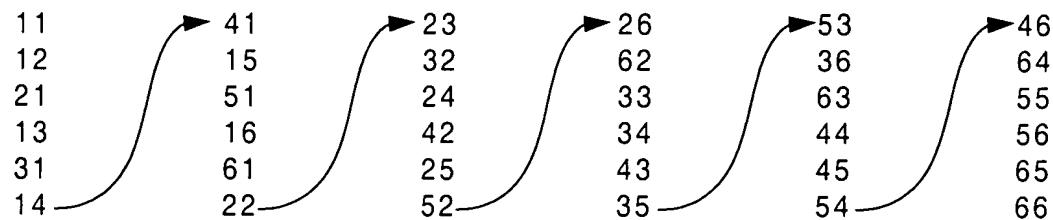


Figure 2

|     |     |    |    |    |
|-----|-----|----|----|----|
| 2h  | 3h  | 4h | 5h | 6h |
| 2h  | 3h  | 4h | 5h | 7h |
| 2h  | 3h  | 4h | 5h | 8h |
|     |     | •  |    |    |
|     |     | •  |    |    |
| 2h  | 3h  | 4h | 5h | Ah |
| 2h  | 3h  | 4h | 6h | 7h |
| 2h  | 3h  | 4h | 6h | 8h |
|     |     | •  |    |    |
|     |     | •  |    |    |
| 3h  | 4h  | 5h | 6h | 7h |
| 3h  | 4h  | 5h | 6h | 8h |
|     |     | •  |    |    |
|     |     | •  |    |    |
| 9s  | 10s | Js | Qs | Ks |
| 9s  | 10s | Js | Qs | As |
|     |     | •  |    |    |
|     |     | •  |    |    |
| 10s | Js  | Qs | Ks | As |

**Figure 3**

Symbols as Major Order (Two Dice)



Position as Major Order (Two Dice)

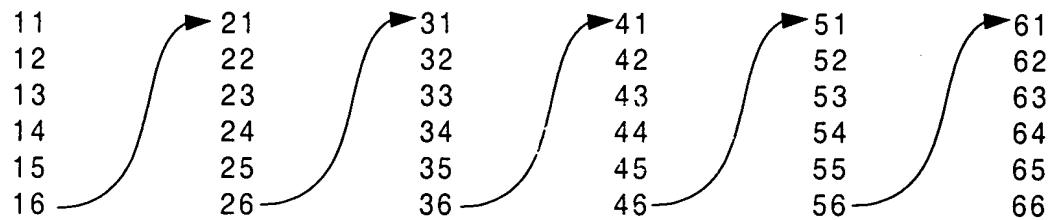


Figure 4

Poker Hand Under Consideration    3H    KH    2D    7C    4S

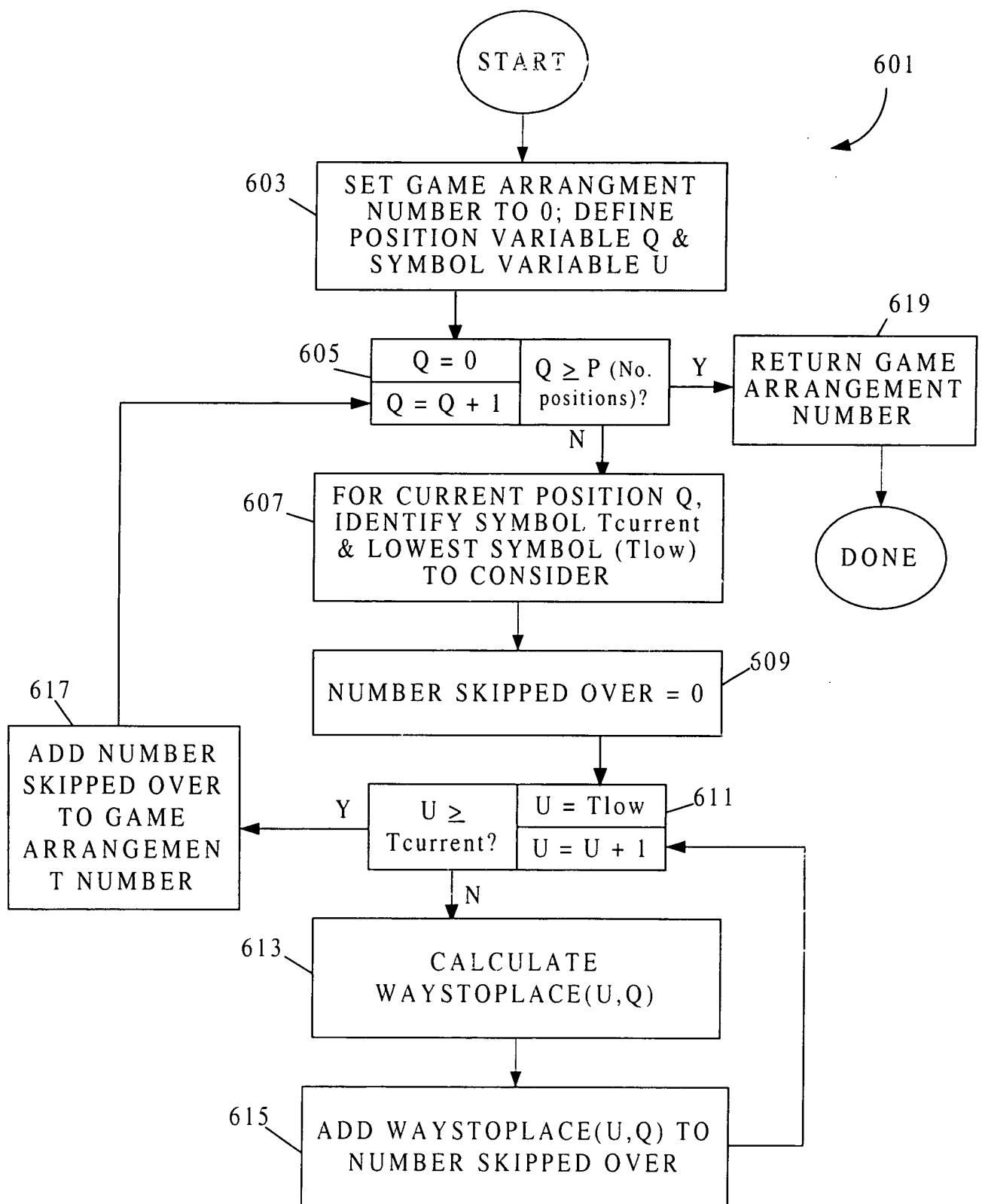
number skipped over at position P=0

|  |     |     |    |    |    |
|--|-----|-----|----|----|----|
|  | 2H  | 3H  | 4H | 5H | 6H |
|  | 2H  | 3H  | 4H | 5H | 7H |
|  | 2H  | 10S | JS | QS | KS |
|  | 2H  | JS  | QS | KS | AS |
|  | 3H  | 4H  | 5H | 6H | 7H |
|  | 3H  | 4H  | 5H | 6H | 8H |
|  | 3H  | 4H  | JS | QS | KS |
|  | 3H  | 4H  | QS | KS | AS |
|  | 3H  | 5H  | 6H | 7H | 8H |
|  | 3H  | 5H  | 6H | 7H | 9H |
|  | 3H  | QH  | JS | QS | KS |
|  | 3H  | QH  | QS | KS | AS |
|  | 3H  | KH  | AH | 2D | 3D |
|  | 3H  | KH  | AH | 2D | 4D |
|  |     |     | •  |    |    |
|  | 10S | JS  | QS | KS | AS |

Ways to place 3H 4H, ....

number skipped over at position P=1

**Figure 5**



**Figure 6**

Convert KH, 7C, 4S, 8D, 3H to a number

Order the Cards! → 3H, KH, 8D, 7C, 4S

Start with # = 0

Position Q = 0

Symbol T= 1 (3H) 3H - - -

U = 0 (2H)

Compute # of ways to place 2H - - - (choose (52-0-1, 5-0-2))  
= 249,900

$$\# = 0 + 249,900 = 249,900$$

Position Q = 1,  $T_{current}$  = KH,  $T_{Low}$  = 4H; 3H KH - - -

U = 2 (4H)

Compute # of ways to place 3H 4H - - -  
= 18,424

$$\# = 249,900 + 18,424 = 268,324$$

U = 3 (5H)

Compute # of ways to place (3H 5H - - -) = 17,296

$$\# = 268,324 + 17,296 = 289,620$$

U = 4 (6H)

Compute # of ways to place (3H 6H - - -) = 16,215

$$\# = \# + 16,215 = 301,835$$

U = 5 (7H)

Compute # of ways to place (3H 7H - - -) = 15,180

$$\# = \# + 15,180 = 317,015$$

U = 6 (8H)

Compute # of ways to place (3H 8H - - -) = 14,190

$$\# = \# + 14,190 = 331,205$$

U = 7 (9H)

Compute # of ways to place (3H 9H - - -) = 13,244

$$\# = \# + 13,244 = 344,449$$

U = 8 (10H)

Compute # of ways to place (3H 10H - - -) = 12,341

$$\# = \# + 12,341 = 356,796$$

Figure 7A

U = 9 (JH)

Compute # of ways to place (3H JH - - -) = 11,480

# = # + 11,480 = 368,270

U = 10 (QH)

Compute # of ways to place (3H QH - - -) = 10,660

# = # + 10,660 = 378,930

U = 11 (KH) This our symbol T. Stop and go to the next position.

Position Q = 2, Symbol T = 19 (8D)

---

by placing this card

#s skipped over by (3H - - - -)

= ways to place (2H - - - -)

by placing this card

# skipped over by (3H KH - - -)

= ways to place (3H 4H - - -)

+ ways to place (3H 5H - - -)

+ ways to place (3H 6H - - -)

+ ways to place (3H 7H - - -)

+ ways to place (3H 8H - - -)

+ ways to place (3H 9H - - -)

+ ways to place (3H 10H - - -)

+ ways to place (3H QH - - -)

# skipped over by (3H KH 8D - -)

= ways to place (3H KH 8D - -)

+ ways to place (3H KH AH - -)

+ ways to place (3H KH 2D - -)

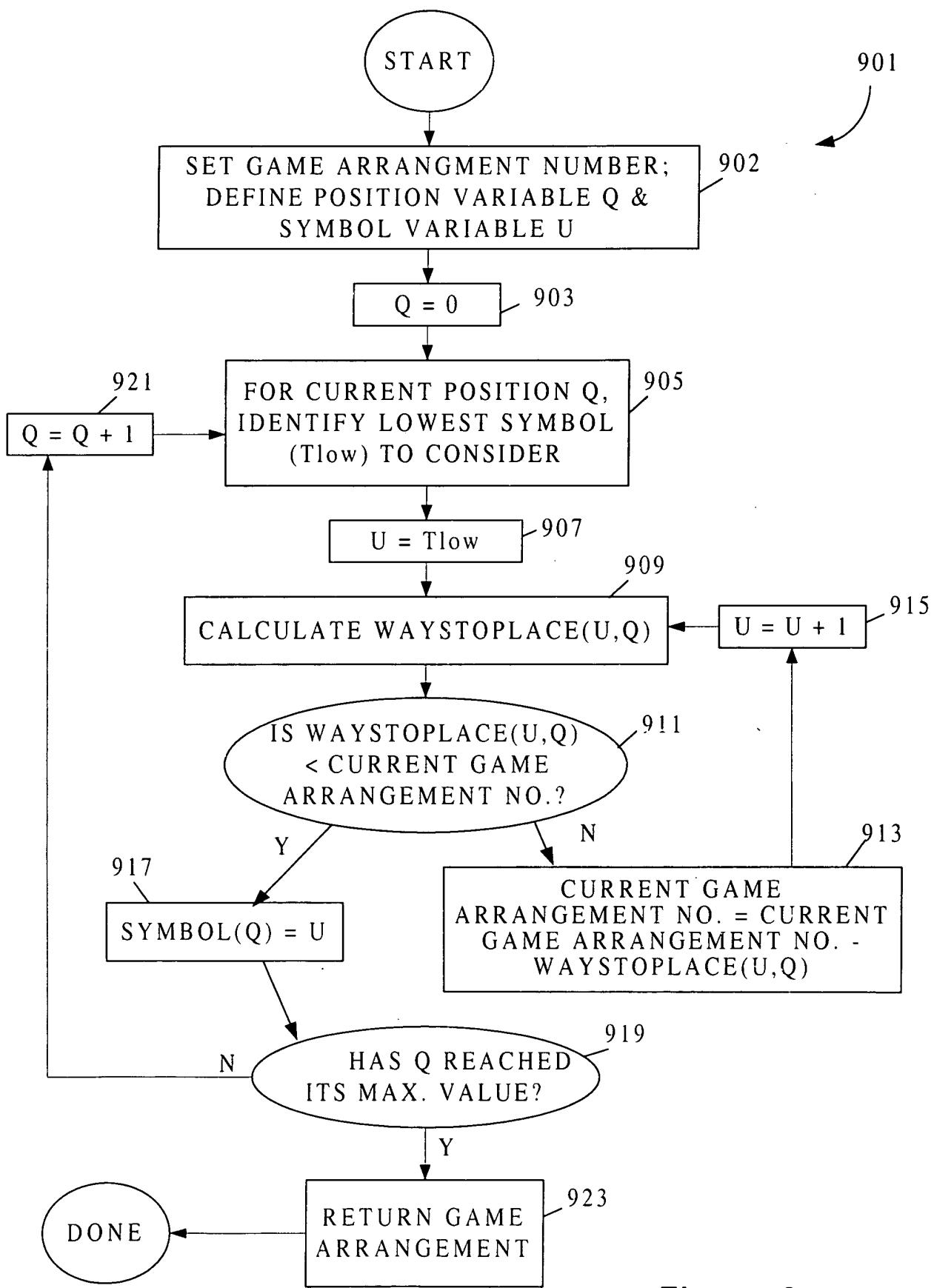
+ ways to place (3H KH 3D - -)

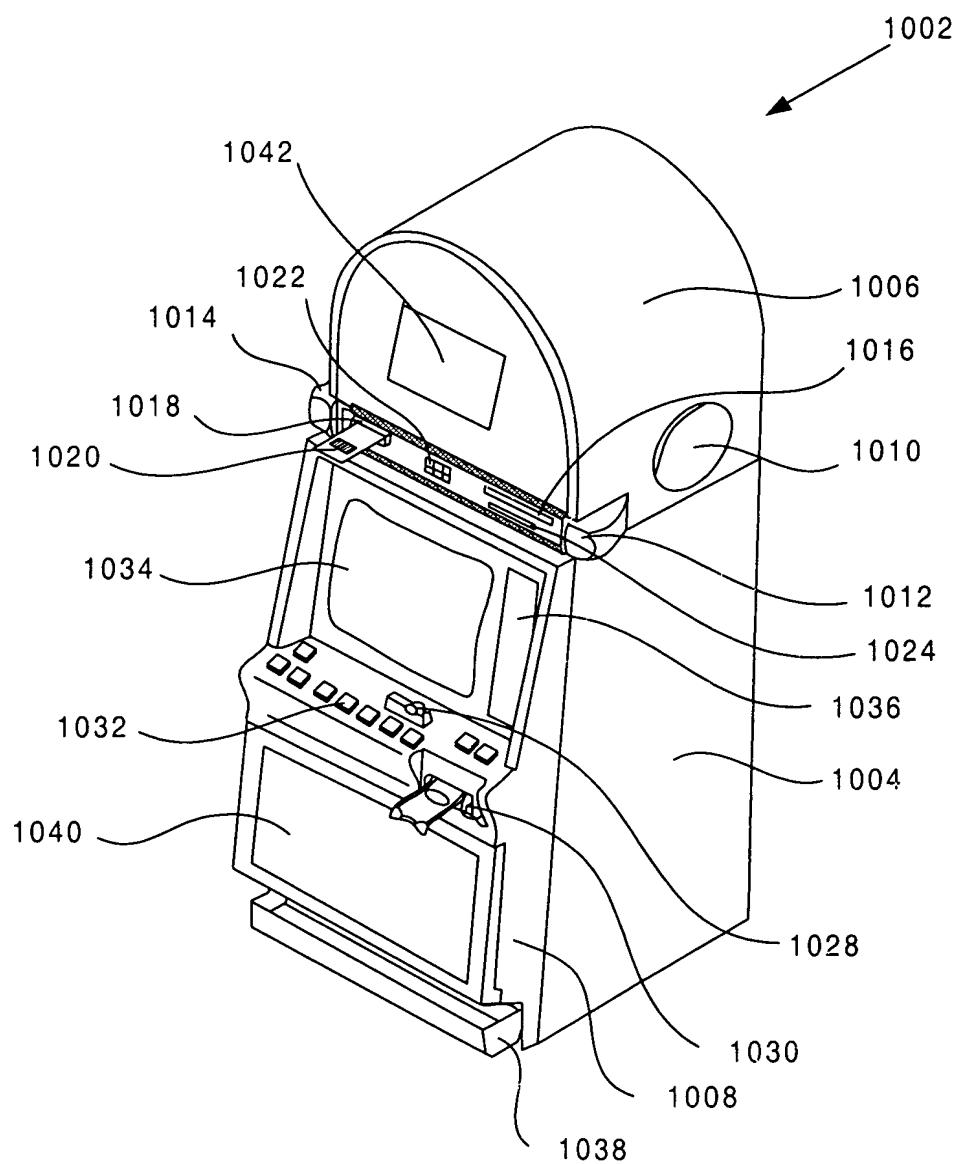
+ ways to place (3H KH 4D - -)

Figure 7B

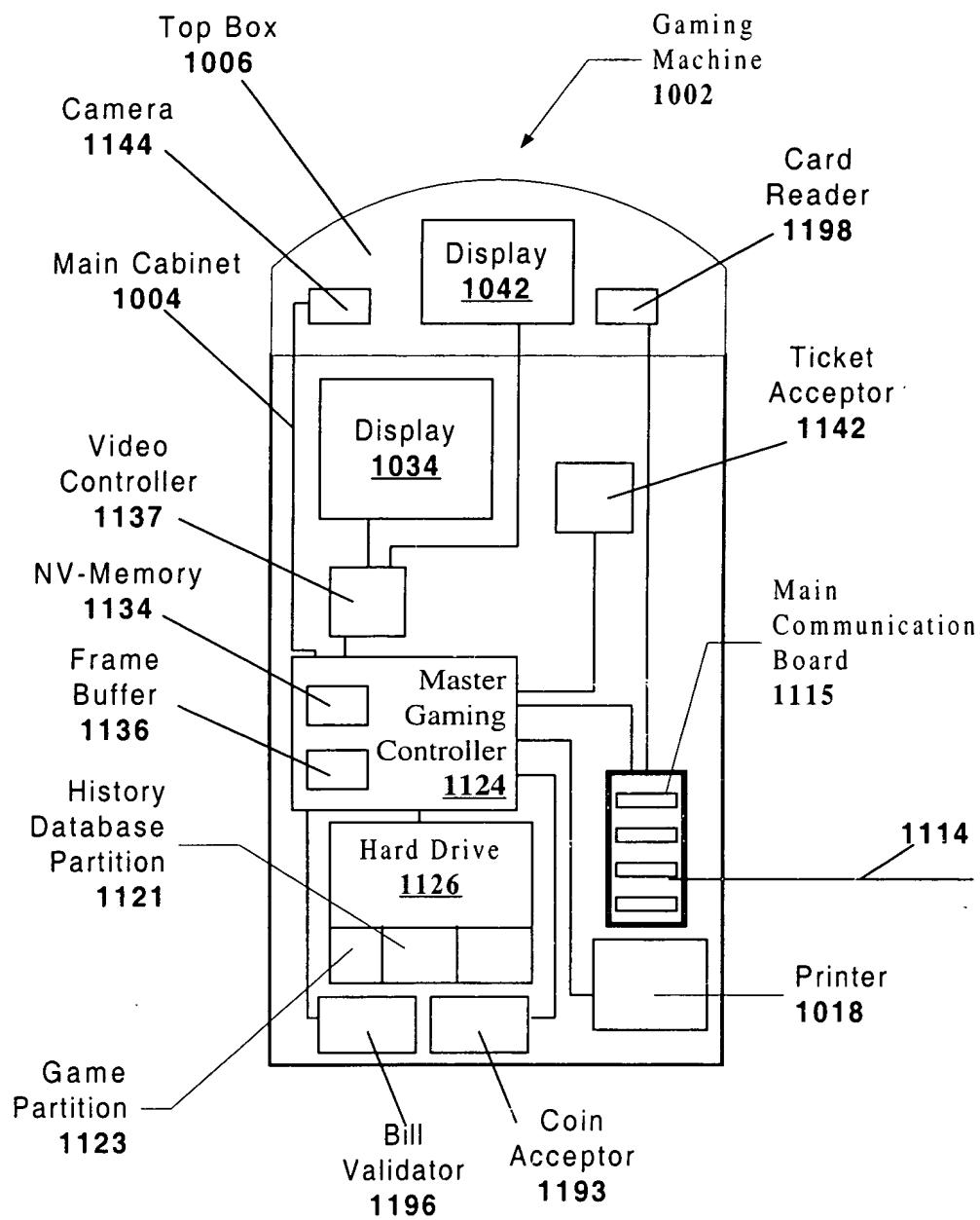
|                     | Position Dependent  | Position Independent   |
|---------------------|---|--|
| With Replacement    | $\exp(x, y)$<br>$0 \leq U \leq T_{curr}$<br>$T_{low} = 0$   | $C(x, y)$<br>$T_{prev} \leq U \leq T_{curr}$<br>$T_{low} = T_{prev}$ |
| Without Replacement | $P(x, y)$<br>$0 \leq U \leq T_{curr}$<br><small>(excluding previously used values)</small><br>$T_{low} = 0$ | $C(x, y)$<br>$T_{prev} < U < T_{curr}$<br>$T_{low} = T_{prev} + 1$   |

Figure 8

**Figure 9**



**Figure 10**



**Figure 11**